

Physical Reflections  
UPON A  
**LETTER**

WRITTEN

By *J. Denis* Professor of PHILOSOPHY  
and the MATHEMATICKS,

TO

*Monsieur de Montmor* Counsellor to the French  
King, and Master of Requests;

Concerning a New way of Curing sundry Diseases.

BY

**TRANSFUSION of BLOOD.**

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BY *GEO. ACTON* a *Spagyricus Regius in Ordinario.*

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**L O N D O N,**

Printed, by *T. R.* for *J. Martyn*, at the Bell without  
*Temple-Barr*, 1668.

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TRANSLATION OF BLOOD.

BY GEO. ACTON, a French Reſident in London.

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Printed, by A. R. for J. Mays at the Bell without

Temple-Bar, 1688.



TO THE

KING.

SIR,

**H**AD not the subject of this following discourse, been the discovery of the most acute and curious Genius of this age, the Virtuosi of the Royal Societies of London and Paris, and the quality I bear, of your Majesties servant, given me some title to your Majesties Protection, I durst not have presumed to front such a bagatelle as this, with an Address to the mightiest Monarch in

## The Epistle Dedicatory.

in Europe; But a Cherry or Rose presenting the ordinary seasons of the maturity of the rest; by their rare singularity are rendered acceptable to Princes, not for their own real value (which is none) but novelty, which challenges their acceptance. And Sir, the Experiments of Healing by Transfusion of Blood, are both New and Curious, and I hope these Reflections may cast some Radiations of light upon the obscure and devious paces of Nature, such as may perhaps discover some of her more hidden recesses, especially in her regiment of Humane Bodies. I have (as far as was possible) avoided hard and obscure words, but having taken upon me to inquire into the reasons, and examine the admirable success of these late Experiments, by the Test of Hermetick Philosophy, it was not possible for me to avoid such Terms as this Art necessarily requires to render it intelligible; though (if I mistake not) this method gratifies the understanding with far more evident and apparent reason than that of the Peripateticks, commonly received in the Schools; I need not labour to persuade Your Majestie into a good opinion of the noble Science of Chymistry, which solely possesses all the keys of the three Kingdomes of Nature, the natural propensity of Your Royal Genius, strongly inclines

## The Epistle Dedicatory.

*inclines You to the love of all Learnings, but more particularly of this, the most worthy perhaps of all humane Sciences, such as that antiently amongst the Egyptians, Chaldeans, Arabians; &c. Many of their Kings have gloried more in the knowledge of this Art, than in the lustre of their Diadems, such were Hermes, Trefmegistus, Morienus, Calib, Alphonso King of Portugal, &c. and although the ignorance and Thraasonick boasting of Pseudochymists, have almost brought it into contempt in this Age; yet it is a most undoubted truth, That Paracelsus, Van Helmont, and many others, have been able to conquer all Diseases Gallenical Physitians now call incurable, and that with great facility; in effect, true Philosophers have not only had Universal Medicines for Humane, but Metallick bodies also, insomuch that the Chrysopæan Art is said so to have flourished in Egypt, about the year 294. that the mighty Emperor Dioclesian could never conquer that people by force, till he had by Stratagem in time of peace possess'd himself of the Books, together with the Artificers, and by that means subjected them to his Empire. But Mr. Denis's Letter gives me only opportunity at present to expose some few Physical observations, tending to health and prolongation of life, both which,*  
with



## The Epistle Dedicatory.

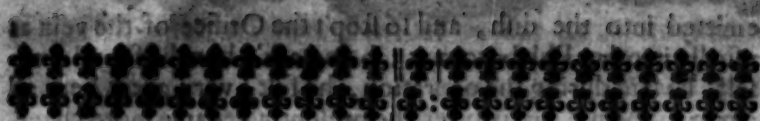
with excess of all humane felicity & may the King of Kings by  
the guidance of his inviolable providence inseparably adhere  
to your Majesties Crown and Sacred Person.

**Your Majesties most Loyal**

**and most Obedient Subject**

**and Servant.**

**GEO. ACTON.**



# Physical Reflections UPON A

## LETTER, &c.



Har which I find most remarkable in Mr. *Denis's* Letter, is first, the Transfusion of the Blood of a Mangie Dog into a Sound one, to try whether the Mange would be communicated with the blood, the Mangie Dog is found cur'd; and the other who had received his blood, not become Mangie.

The next is the Experiment upon a Youth, who had for the space of, above two Months, been tormented with a contumacious and violent Fever, which (saies the Narrative) oblig'd his Physicians to bleed him twenty times, in order to assuage the excessive heat. Before this Disease he was not observed to be of a lumpish dull Spirit, his Memory was happy enough, and he seem'd cheerful and nimble enough of body; but since the violence of this Fever, his Wit seem'd wholly sunk, his Memory perfectly lost, and his body so heavy and drowsie, that he was not fit for any thing: to trouble you no longer with every particular of the relation; They opened his vein, and took about three ounces of blood, so black and thick, it could hardly form it self into a thread to fall into the Porringer: At the same time they brought a Lamb, whose *Carotis* Artery was prepar'd, out of which, they emitted into the Young mans vein about three times as much of its *Arterial* blood, as he had emitted

emitted into the dish, and so stop't the Orifice of the vein as usually in other Phlebotomies; being ask'd how he found himself, he said during the operation, he felt a very great heat all along his Arme, but in brief, he presently became more cheerful and lively, eat his meat very well, and shew'd a cleer and smiling Countenance; the next day slept better, and from that time got the victory over his drowiness, he had no longer slowness of Spirit, nor heaviness of Body, grew fat visibly, and is, (saies Mr. Denis) a subject of amazement to all that know him.

Though Mr. Denis hath sufficiently answered the weak objections against the Practice of this new Art, yet, how the sound infus'd blood of one Animal, mingling with the infected Mass of another (and especially, of a different Species,) induceth renovation and health into the diseas'd, without receiving infection from so desperate a commixtion, seems worthy of a further inquiry than has been yet made.

As to the Experiment of the exchange of blood, between the Mangie Dog and the Sound one, by which the first receives his cure, the other remains uninfected, Mr. Denis inquires whether the blood of the Mangie Dog were putrefied, and corrupted in his veins or not: As if putrefaction of the blood, were necessarily the efficient cause of the Disease; but by the common experience of Anatomy, the blood is found not to putrefy within the vein many daies after death; much less than it is to be suspected ordinarily of putrefaction in the living vein, where, by continual circulation, and the irrigation of the vital Balsome of its volatile salt, congelation, the beginning of putrefaction is most powerfully resisted. Besides, the *Adepti* know how to rectify the blood in all Fevers, the *Galenists* call putrid, (*sic dicitur Symplicius*) with the precipitate Diaphoretick of *Parasulfur*; But surely, if putrefaction be the repulsion of the Crasis of the thing putrefied, necessarily inducing a new form, the blood must either be granted not putrefied in the Vessels, or a regression from privation to habit, which is absurd.

In the same Experiment, Mr. Denis supposing the blood of the Mangie Dog to be wholly corrupted in his veins, imagines it  
probable



probable that the cooler blood of the sound Dog, alaying the extreame heate of the other, may work the cure; ascribing the Disease to the Transpiration of corrupted blood, and that, to an extraordinary heat. But the blood being supposed to be vitious, to prevent its diffilation by cooling, were sooner to introduce death, than a remedy; besides, Transpiration is not the effect of heat effective, but excitative only; for the blood is properly volatiliz'd by the Vital spirit and its own Ferment, whose operation is more powerful than that of Fire; for Glafs held for the last act of Fire, is really further reducible by the help of Ferment into water: So then the action of extream heat (such as is supposed here) would rather have desiccated and fixt the blood than have mov'd it to Transpiration; Be it then properly the act of the Vital spirit and Ferment, and not of heat, and consequently no need of cooling in our case.

Now as to the Disease it self, I take it to be the excretion of an Acid salt from the blood, closing with *Hippocrates Acidum, Acre, Amarum, Ponticum, &c.* for Morbifick causes. This hostil Acidity (as we see in Tartar of Wine, which is no other than a congelation of the Acetous part of the Wine into Salt,) beginning some degree of fixation of the volatile Salt of the blood, contrary to the scope and intention of Nature, which is, to have it totally volatil and transpirable without any feces, is by the prepotency of the Vital spirit and Ferment, driven out together with the half fix'd Salt into the skin, where for want of volatility, it sticks and turns to the Mange. Hence I suppose that if the sound Dog had been coupled up with the other for some time, he had been more likely to have received his contagion, than by the Transfusion of blood.

The Experience upon the youth labouring of a violent fever and cur'd by immission of the Arterial blood of a Lamb into his veine, is more observable, as being more applicable to practice; now As to the fever; I take it for a Maxime, *Quidquid in sanis edit actiones sanas, idipsum in morbis edit actiones vitiatas.* But in health the vital Spirit naturally warmes a man, the same Spirit therefore *estuat* in a fever, vehemently striving to expel

pell the occasional matter of the Disease; and this I take to be the *Impetus*, or *Spiritus impetus faciens* of *Hippocrates Van Helmont* proves this by the example of a thorne run into the finger, which though both actually and potentially cold, nevertheless quickly raises a burning, paine, and phlegmor in the part, inasmuch as the sensitive Spirit being hurt by the thorne, provokes the Archeus to expulsion; in which endeavour, the Spirit is first accended and then the part: Hence expert Physicians direct their cure of fevers and other acute Diseases, to the pacation of the Archeus, without purging or letting of blood; how contrary was the procedure of those Physicians who blooded this youth twenty times to allwage the heat of his fever; but to how little purpose these large profusions of blood are, may appear by the miserable death of *Pr. Ferdinand* Governor of *Flanders*, who in the year 41 fell sick of a fever, his Physicians (according to the method of these) with reiterated Phlebotomies so exhausted the stock of his blood, that being dead, and his Heart, Lungs, Liver, Veines, and Arteries dissected in the presence of *Van Helmont*, there was scarce found a spoonfull of blood left in his body, and yet the day before his death, he had sustained as violent a fit of his feaver as at first; I leave it then to the Judgement of the indifferent Reader that hath not Subjugated his reason to the Authority and vulgar practice of others to the contrary, to judge whether Bleeding be a proper Remedy for a fever, when the Exantlation of almost the whole Masse of blood, had not so much as made any Diminution of the Paroxisme. But to strengthen this my opinion a little further, which seemes to be singular, easily to gain credit, take this familiar Instance: Let a vessel of new Wine before its clarification, be supposed to be agitated by a vehement Fermentation, which motion in the Wine (as in our case of the fever) is stir'd up by the natural force and activity of its Spirit, striving to attain the vertue of its perfection; which cannot be but by the shaking off, and Separation of the Tartarous and other wild Heterogenious and Immixt parts from the truly Vinous and Homogenial; the scope of Nature is the very same in the fit of a fever, viz. Separation, now let any man

man to stop this Fermentation draw off a part of the Wine, and he shall soon perceive that although he hath lessened the quantity of the Wine, he has by this meanes made no alteration in the quality, the Fermentative principles in the remaining part, keeping still their natural Energie in proportion to the whole: but if an untimely Fermentation happen, tending to the destruction of the Wine, let him but cast in a due proportion of milk, and he shall quickly stide that furious orgasme of the Wine to cease; so that this turbulent motion in the Wine either ceases naturally, the Heterogenious parts being separated by due Fermentation, or else by *Sedation*, as in the experiment by milk, the like method seemes most rational in the cure of a fever, either by Medicines separative, of which I prefer Diaphoreticks, or sedative without phlebotomie, by which there alwayes happens some irreparable losse: for though not only the blood, but insuuous Spirit too, be restorable by our daily food, yet the losse of the insituous or innate Spirit is never recoverable by art or Nature; if it were it would not be impossible by art to render men immortal. If then either the insuccesfulness of the practice, or reason may prevaile; I advise the *Galenists* to make use of powerful Diaphoreticks in rectifying the blood, or such sedative Medicines as can quiet the enormous Spirit, rather than this needlesse custome of Bleeding. Especially since the *Angina*, *Peripneumonia*, and *Pleurisie* can more speedily and securely be cured without it. The Experimentor here seemes to be well satisfied with his conceipt of stagnation of the blood in the vessels, thinking his opinion sufficiently confirm'd by the issuing forth of a blood blacker and thicker than ordinary upon the opening of the patients vein. But the *Ethiopianni* in their youthful and most vigourous estate of health, are said to have their blood very black, with little or no Serum. And upon inspection of the blood of neer 200 severall persons drawn in one day (it being a custome amongst the Bores in *Flanders* to be blooded upon a certain day) there were found all sorts of colours and consistencies the most dissimilar imaginable to be found in blood, and the severall men from whom such variety was drawn, all of them in a perfect

(47)  
state of health: *Van Helmont* (well acquainted with the excellent Medicinal use of the blood) goes further, and making choice of the most different sortes, First, tryes them by their analyses, then by their virtues, administering them prepar'd severally according to Art, and finds them (notwithstanding their diversity of colours) of equal force in medicine: so that this sort of divination by colour seemes full of uncertainty. As Dyers our of the same vate, and same tinging liquor, at the same time give severall colours, according as the severall peices are variously prædispos'd; so perhaps the univocal liquor of the Stomack in its progression to the liver, meeting by the way with severall Ferments, receives severall tinctures, without any Depravation at all of its Substance. For proof of this the foregoing experiments may suffice.

Now as to the process; the *Arterial* blood of the Lamb, is immitted into the *vein*, of the man the Patient finds a great heat all a long his Arm but not any further. The reason perhaps why he finds a heat in his Arm and no further, may be the impetuosity of motion in the narrow chanel of the Arm by the irruition of a quantity of fresh blood, which entring by the subclavia into the large ascendant trunck of the *Cava*, though quickening the motion there, yet having more room and being more immerg'd, the excessive heat ceases, for no more new blood enters this great channel than pass'd the lesser; besides, motion of impulse is so much the quicker, by how much it is neerer to the *impellent*. Nor shall I doubt to assigne the cure both of his side and fever, principally to the nimbler circulation of the blood of the Patient, actuated as well by the extrinsick motion of the Arterial blood of the Lamb, as by its tenuity, for it may probably be suppos'd much thinner than the *Venal* blood of the Patient, since naturally the *Arterial* blood is thioner and moves faster than the *Venal*. Nature seemes to teach us not only the use, but even necessity of a nimble circulation of the blood by stirring up quicker and stronger pulsations in the Heart and Artery during the crisis; here I must forsake *Gal-len* and not allow the principal use of the pulses to be, *Ad cordis refrigerium et fuliginis explosionem*; for the Heart and Arterie of

28



a frog (without need of refrigeration or fuliginous explosion, because actually cold) being dissected alive, pulse as in other Animals whose blood is actually hott; and if you will say that potential suffices; It seemes absurd to suppose a thing bare ly in *Potentia*, *Actu jam agere*; it is more likely then on the contrary, to be *Ad caloris augmentum*, and that for the most part; but alwayes for the production of the vital Spirit, and participation of it, to the languishing mass; and this by traction of Aire by the *Arterial* veine and *venal Artery* into the left ventricle of the heart; for *Gallen* esteemes Air as it were the food of the vital Spirit, and the learned *Chymists* (not every distilling Mountebanck) know how by the help of Air, to volatize the most fixt Alkalious salts, that the force of the most vehement Calcination can produce: so then Nature seemes rather to intend Volatization than Refrigeration, by the pulses; for as *Bartholinus* observes in acute fevers, and most violent Ebullitions of the blood, the pulse is often weak and low, which otherwise ought then to be strongest. This being granted, let us see in our case, what probability of quickening, the motion and volatization of our Patients diseas'd blood by this immission of the blood of a Lamb; and what other benefit may occur by this commixion tending to a cure.

I have already shew'd how the motion of the Patients blood, might be advanced by the Impulsion and Attenuation of the other; there is yet a more natural way, which is, by the induction of a new Ferment. This, *Hippocrates* calls Divine, and is the undoubted parent of natural motion, *Cum tendentia* (says the excellent Dr. *Willis* in his book *de Fermentatione*) *ad perfectionem, vel propter mutationem in aliud*. Now the motion requir'd in our case, tending to the Melioration of the blood, and consequent cure of the fever, is, that it be thoroughly volatiz'd, and dispos'd to an easy transpiration; Hence *Paracelsus* and *Van Helmont* (next to their great universal medicines conquering all diseases) commend the volatil salt of Rosemary, Sage, Rue, &c. for the cure of fevers, and the volatil salt of Tartar, for the cure of almost all diseases; wee see how soon a little Spirit of Wine cheers and quickens the vital Spirit,  
by



by mingling it self presently with it by reason of their Analogie; but the Spirit of Wine is nothing but the solution of its volatile Salt; for it may by the Spirit of Urine or Salt of Tartar, be corporified into a manifest and palpable saline concretion, and indeed it is in this instance by contact of the Vital Ferment presently turn'd into a volatile saline nature, such as is the Vital spirit it self. Now that the Vital spirit is of a saline nature, seems evident by the testimony of Sense, for if a part happen to be torpid or benum'd, by any accidental prohibition for a while of the influx of the Animal spirit, which acquires no formal transmutation in the *medulla oblongata*, nor other difference from the Vital, *sans gradu perfective*, upon the return I say of this spirit to the succour of the part labouring, we find a kind of stinging and pricking, an infallible Index of its saltiness; as is its total distillation in healthful bodies, of its volatility: I mean here the Influxus spirit, which is continually restor'd, not to the Insitour, whose decay is naturally attended with irreparable weakness and its total extinction or efflation, with present death. Let us now see if we can find such active principles in the blood of the Lamb thus emitted without diminution of its vital energie, as may suffice for the actuating of the languishing Ferment of the blood of the Patient.

It cannot be deny'd, but that the blood of Beasts as well as men, is full of Vital spirit, and volatile Salt. *Fernelius* (*de spiritu oxventium*) defines the spirit of all living creatures to be *Corpus aetherium*, and *Aristotle* holds it to be of a Caelestial Divine nature; answering to the Element of the Starrs. There cannot probably then be so great a dissimilarity between the Vital spirit of the Lamb, and that of the Man, but that the first, (elaborated in its way to the Patients heart, by the Action of the Innate spirit implanted in every part, and afterwards by the force of the Vital Ferment in the left Ventricle, which *Helmont* calls (*Maxime vitalis et luminosum*) may easily be transmuted, and assimilated into the latter; and the Archeus of the Patient thus fortified might well overcome his disease, Nature being her self (if freed from impediment) *Morborum Curatrix*.

Now

Now as to the volatile Salt, it may be esteemed the Balsom of life, and preserver of the whole body from corruption, upon whose Oeconomy depends the just Circulation, and (as I said) the Diffusion of the blood; and upon these, the preservation of the life of the Individual: This Salt resolves the Congelations of extravasated blood, opens Obstructions in the Veins, resists and conquers Acidity: *Omniem Aciditatem quam attingit, perimit laici Helmones* but Acidity (according to him) out of the stomach is inimicous to the whole body, *Exorbitans Pestilensve impressio est in cruore si accescat, aut si à venis sprta ejiciatur, Apostema parit ubicunq, id locorum contigerit.* Besides these more than sufficiently powerful Operations of the Vital spirit and Volatile Salt, there are yet in the blood innumerable secret medicinal Virtues. The blood of a sound man prepared according to Paracelsus, is allowed by the consent of the most learned and experience'd Chymists, to cure Radically the Epileptic Palsie, Apoplexie, ex-ulcerated lungs, and Pleurisie; and (if Faber deserve credit) may worthily be esteemed amongst the greatest *Mediana.* The blood of an Ass is said to cure a Quotidian Fever, and of an Asses Colt the Yellow Jaundies. The blood of a male Goate rightly prepar'd (for as 'tis found in Apothecaries shops it failes) certainly cures the Pleurisie and Peripneumonia. The blood of an Oxe is said to cure the Dysenterie. The blood of a Cat cures the Falling-sickness and Herpes. Of the blood of a male Deer is made a Balsom against the Gout. The blood of a Fox is an excellent remedy against the Stone in the Reins or Bladder. If then Blood extravasated be endued with so many admirable and powerful virtues, what may we expect from it communicated (as in this our Experiment) without any loss at all of its mumial virtues? surely such an addition of Vital treasure to the depauperated store, must needs enrich it with new strength, quicken all the Vital faculties, and might with very good reason overcome our Patients Fever.

There is yet a consideration which perhaps may not seem vain to such as are acquainted with Hermetick Philolophy, and 'tis this, a Lamb is esteemed to be the meekest and most peace-able Animal Nature has brought forth; why then might not his blood

Blood fill'd with conformable Ideas, by the imagination of the Archery, introduce such a pacation into the tumultuous blood of the Patient as was sufficient for his cure. For thus certain *Arrows* prepared by secret Art (unknown to all vulgar Chymists) by inducing onely rest and in the Enormontick spirit, are effectu'd by *Paracelsus* and *Van Helmont* (and some of them known to my self) for almost Universal Medicines. Since then the practice of this new method of Healing by *Transfusion of Blood*, seems to be warranted both by reason and experience, I advise the curious Experimentor, to make trial upon Animals of the longest life, such as are Staggs, Eagles, Crows, &c. for the prolongation of life; And in the cure of Diseases, to make choice of such Animals as by their specific proprieties are found to have curative virtues peculiar to several Diseases.

And thus I have given a guess at the reason of this new and (till of late) unheard of way of curing; by *Transfusion of Blood*, which if I have err'd, let it serve for my excuse, that no man has gone before me to shew the way.

**FINIS.**

